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# **FINAL REMEDIAL ACTION WORK PLAN**

## **BNSF LIBBY RAILYARD HYDRATED BIOTITE REMOVAL LIBBY, MONTANA**

**EMR PROJECT 5539.002-1**

*Prepared for:*

**The Burlington Northern Santa Fe Railway Company**

139 North Last Chance Gulch

Helena, Montana 59601

*Prepared by:*

**ENVIRONMENTAL MANAGEMENT RESOURCES, INC.**

2509 152<sup>nd</sup> Ave. NE, Suite E

Redmond, Washington 98052

**OCTOBER 2002**

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**OCTOBER 2002**

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## EXECUTIVE SUMMARY

This Work Plan is intended to detail the Scope of Work for a planned Final Remedial Action (FRA) at the Libby, Montana Railyard, herein referred to as the Site. The objective of this FRA is to remove visible hydrated biotite from the surface of the Site that was mapped in October 2001.

The FRA will consist of stripping visible hydrated biotite from the surface along with the top one to two inches of soil. Following the FRA, soils samples will be collected to evaluate whether visible hydrated biotite are present. The material will be removed with a vacuum truck equipped with a High Efficiency Particulate Air (HEPA) filter. Soil will be transferred to a container under a controlled atmosphere.

Dust suppression and air monitoring will be conducted while the vacuum truck is stripping soil and during transfer operations.

The Scope of Work is outlined in Section 1.0 of this Work Plan. The Sampling and Analysis Plan is Section 2.0. Significant Deliverables for this project are this Work Plan, a Health and Safety Plan, a Project Specification, a Draft Report, and a Final Report.

## **1.0 INTRODUCTION**

Environmental Management Resources, Inc. (EMR) has prepared this Work Plan for The Burlington Northern Santa Fe Railway Company (BNSF) to remove visible hydrated biotite from the surface at the BNSF railyard in Libby, Montana, herein referred to as the Site. The Project Specification prepared by EMR in July 2002 and revised in October 2002 should be referenced for information and requirements specific to this Final Removal Action Plan (FRAP).

Revisions to this FRAP are based on EPA comments dated October 3, 2002 and an October 9, 2002 pre-construction meeting of key project personnel. USEPA representatives were in attendance to provide guidance, as requested.

All work of this FRAP is to be completed by the end of December 2002, weather permitting.

The Scope of Work for this project is divided into four tasks.

Task 1 – Mobilize, setup, and demobilize.

Task 2 – Remove, transfer, containerize and dispose of surface soils containing visible hydrated biotite.

Task 3 – Complete air monitoring during surface soil removal and containerizing.

Task 4 – Complete soil sampling to evaluate the effectiveness of the FRAP

### **1.1 SITE MOBILIZATION AND DEMOBILIZATION**

#### **1.1.1 Surveying/Staking**

In October 2001, EMR completed a map of visible hydrated biotite at the Libby Railyard. Areas with visible hydrated biotite are shown on Figures 1 and 2. A grid system was established, and boundaries of visible hydrated biotite were staked with metal stakes. This grid system will be utilized to provide the information necessary to remove the previously identified surface soils.

BNSF intends to remove visible hydrated biotite. Following removal of visible hydrated biotite, confirmation soil samples will be collected from the bottom of the removal area per Section 2.3 of this Work Plan and submitted for analysis of Libby Amphibole (LA) asbestos (tremolite/actinolite series) by PLM (method 9002, Issue 2). Samples will be sent to EMSL Laboratories via CDM Federal Programs Corporation.

### 1.1.2 Mobilization and Set Up

Prior to mobilization, United States Department of Transportation (USDOT) inspections of the vacuum truck integrity will be completed and documented.

The site will contain an Exclusion Zone (EZ) and Contamination Reduction Zone (CRZ). The EZ is the area where clean-up is taking place and following cleaning these areas are also considered to be EZ's until soil sampling results do not detect Libby amphibole. The CRZ includes the personal decontamination trailer and equipment decontamination facilities. The EZ will be demarcated with signage and/or asbestos-caution tape and yellow or white traffic cones. If signage is used, the following language will be on the signs:

"DANGER ASBESTOS

CANCER AND LUNG DISEASE HAZARD

AUTHORIZED PERSONNEL ONLY

RESPIRATORS AND PROTECTION CLOTHING ARE REQUIRED IN THIS  
AREA"

The EZ is also the regulated area where soil removal activities occur. Employees must be in Level C personnel protective equipment (PPE) inside the EZ.

A contamination reduction zone (CRZ) will be established outside of the EZ. Since clean-up will be from South to North this zone will consist of the area between the EZ and decontamination facilities. A linear corridor of traffic cones from the EZ to the decontamination facilities will be established for personnel to go between the EZ and decontamination facilities. The northern boundary of the CRZ will be the property boundary. The CRZ will contain the personnel three-stage decontamination trailer equipment room (dirty), shower, and clean room). The personnel decontamination facilities will be located east of the highway overpass and scale house on the north side of the tracks. Personal decontamination procedures are outlined in Section 2.1.1 of the Health and Safety Plan (HASP).

Within the CRZ will be the soil transfer and disposal vessel staging area. This area will be set up to the east of the personnel decontamination facilities on the north side of the tracks.

The project site (or clean zone) outside of the CRZ consists of the rest of the BNSF right-of-way and requires Level D PPE.

An activity hazard analysis will be conducted prior to the start of work. A health and safety briefing discussing the findings of the activity hazard analysis will then

be conducted. All work will be conducted in accordance with the Site Health and Safety Plan.

### **1.1.3 Demobilization**

After the visible hydrated biotite and surface soils are removed from the Site, the equipment will be decontaminated as described in Section 2.1.2 of the HASP. The EMR representative for BNSF will verify that equipment is cleaned. The equipment decontamination pad will be located east of the highway overpass and west of the scale house on the north side of the tracks (Figure 1).

## **1.2 SITE PREPARATION**

### **1.2.1 Utility Location**

EMR's subcontractor will schedule and perform a utility locate through the Montana One Call system prior to the commencement of the work in order to determine if any utilities will need to be addressed during removal activities. EMR will conduct a BNSF utility locate using their "Call Before You Dig" telephone number prior to removal.

### **1.2.2 Asbestos Notification**

EMR's subcontractor will conduct all necessary asbestos notifications and secure any permits required from local, state, and federal agencies.

### **1.2.3 Storage Area Mobilization**

Necessary signage will be posted on the Site. Thirty cubic yard dumpsters lined with two layers of 6 mil poly will be staged in the area east of the highway overpass and east of the scale house. See Section 1.3.2 for additional details concerning soil transfer and staging.

## **1.3 REMOVE SURFACE SOIL AND CONTAINERIZE**

Areas with visible hydrated biotite are shown on Figures 1 and 2.

### **1.3.1 Surface Soil Removal**

EMR will direct a vacuum truck equipped with a High Efficiency Particulate Air (HEPA) filter to the areas with visible hydrated biotite. The vacuum truck operator will check the integrity of the hose before the start of work, at the beginning of each shift and after breaks. If the hose contains rips, tears, holes, or any other imperfections that will inhibit the effectiveness of the vacuum unit, it will be repaired or replaced.



The vacuum truck will effectively strip the top one or two inches of soil; and a one-half inch screen will be used to prevent the collection of gravel or cobbles. A worker will continuously maintain the hose effectiveness by knocking off attached gravel and cobbles. The vacuum system will not be powered down to remove gravel and cobbles. The induced vacuum will also remove fines between gravel matrix to further depths up to approximately 1 foot. EMR will be present on site for the duration of the project to oversee the set up, dust suppression, and soil removal. There will be a certified Montana asbestos supervisor on-site who has completed the railroad contractor safety-training course on-line at [www.contractororientation.com](http://www.contractororientation.com) and be accustomed to railway operations to oversee the crew. All site personnel are required to complete the railroad contractor safety training course on-line at [www.contractororientation.com](http://www.contractororientation.com). Additionally, a Certified Industrial Hygienist (CIH) will be on-site initially to oversee the project.

The EMR Site Superintendent will oversee the work and the crew and complete the Daily Soil Removal Report and the Daily Safety Report. Based on historic wind direction data for Libby, Montana, work will start at the location farthest downwind and progress upwind. This corresponds to an expected start at the east (SE) end of the yard as the tracks roughly trend SE-NW. In addition, a wind sock will be utilized at each vacuum truck location to evaluate wind direction such that perimeter area sampling will have the correct upwind and downwind locations. GPS readings and the grid established in October 2001 will be used to determine the location of the soil removal and this information will be recorded on the Daily Soil Removal Report.

On Tuesdays and Thursdays between the hours of 10:00 am and 2:00 pm mountain time, the Libby Local train must use one pair of tracks BNSF railyard. Based on this requirement, and the October 9, 2002, site walkthrough with key project personnel, the vacuum removal will be conducted under the following plan:

Tracks 1 and 2 will be cleaned up first. Based on expected wind direction, work will progress east to west down tracks 1 and 2. The EZ will move from east to west along these tracks. Following removal of visible hydrated biotite on the west end of Tracks 1 and 2, the work will resume at the east end of the yard where Tracks 3 and 4 will undergo vacuum removal of visible hydrated biotite (Figures 1 and 2).

After vacuuming visible hydrated biotite inside the first EZ and soil transfer at the soil staging area, the 2<sup>nd</sup> EZ will be setup. Following receipt of confirmation soil sample results indicating no detectable Libby amphibole, these traffic cones around the respective EZ can be removed. The third, fourth, fifth EZs etc. will be set up following the 2<sup>nd</sup> EZ in similar fashion.

The south extent of the contamination reduction zone (CRZ) boundary will shift from south to north after completion of Tracks 1 and 2. When work commences on Tracks 3 and 4, the CRZ will be situated parallel and north of Track 4 (Figures 1 and 2).

The one limited area of visible hydrated biotite located on a switching track leading to Stimson Lumber Company will be vacuumed at the completion of the rest of the yard (southeast corner portion of Figure 1).

All visible hydrated biotite will be removed to the extent where it is determined that additional removal might undermine rail and ties (6-inches to 1 foot depth). If visible biotite is present at or below this depth and cannot be removed by vacuum truck, then a description and location of the material will be noted on the Daily Soil Removal Report.

Dust suppression procedures are outlined in Section 2.2 of the HASP.

### 1.3.2 Transfer of Soil

Soil transfer and disposal container staging will occur on the north side of BNSF tracks and east of the highway overpass and the scale house.

The following procedures were agreed on during the October 9, 2002 pre-construction meeting:

The soil will be augered from the vacuum trucks inside a vacuum hose into a 30 cubic yard steel dumpster lined with 6 mil plastic sheeting; it will not be blown into a container for disposal as was previously thought. Therefore, the positive pressure situation that was anticipated will not occur and the enclosure for soil transfer is not needed.

Instead of an enclosure, the dumpster lining will extend outside and overlap the sides of the dumpster in a manner so that these flaps can be sealed for transfer and disposal. An additional sheet of plastic will be secured to the liner plastic on the edges of the dumpster providing a roof over the lined dumpster. The vacuum truck hose will be put through an opening cut in the "roof" and the material will be augered into the dumpster.

The contractor will install a HEPA-filtered exhaust machine to remove air from the dumpster during soil transfer. The dumpster will not be under negative pressure as is typical for the industry (-0.2 inches of water column) rather the exhaust will be used to ensure a positive pressure does not develop from the transfer and to filter any particulate that is generated during the transfer process. The air filtration units have a variable rate of

exhaust and the rate of exhaust will be adjusted so that the air inside the box is removed, but not so great that the plastic lining is damaged or pulls away from the interior of the dumpster.

The soil will be wetted as it is collected. Additionally, the contractor will wet the soil in the truck prior to transfer and it will be wetted as needed as the soil passes through a flexible hose into the dumpster.

The dumpsters will be parked on the Contamination Control Line so that the vacuum trucks can transfer their soil while inside the CRZ and the truck hauling the soil can remove the dumpster without entering the CRZ.

Air samples will be collected initially to study any potential airborne asbestos fiber concentrations generated inside the dumpster and outside the dumpster barriers. If concentrations less than 0.01 f/cc are detected inside and outside the dumpster barrier, the air filtration may be eliminated. However, air filtration will not be eliminated without reviewing the sampling data with the EPA on-site representatives and arriving at a mutual agreement regarding removal of the air filtration machines.

Final disposition of soil will be to a newly constructed landfill cell operated by Lincoln County. Containers will be marked for transportation with a transportation Class 9 placard (see Project Specification Section 01013, Part D, Number 10) indicating asbestos containing material.

#### 1.4 FINAL SITE RESTORATION

Final Site Restoration will be accomplished by BNSF and will consist of placement of fresh railroad ballast material over the removal areas, and grading as necessary.

## 1.5 REPORTING AND COORDINATING ACTIVITIES

Progress reports will be submitted to USEPA weekly. The report will follow a standard format that consists of the following topics:

Progress made during reporting period;

Problem areas and resolved/recommended solutions;

Deliverables submitted;

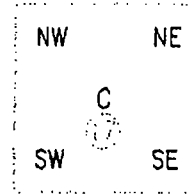
Activities planned for the next reporting period;

Key personnel changes, if any; and

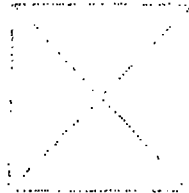
Sampling/lab activities.

# **LEGEND:**

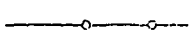
- FENCE
- RAILROAD TRACKS WITH ASSIGNED NUMBER
- MAIN LINE RAILROAD TRACKS (3-4" DIAMETER QUARTZITE BALLAST AT LEAST 1-FOOT DEEP)
- PARKED TRAIN AT TIME OF INSPECTION
- VISIBLE BIOTITE MARKED WITH RED SURVEYOR'S WHISKER
- ED EQUIPMENT DECONTAMINATION
- DT DECONTAMINATION TRAILER
- Ⓟ POWER HOOKUP
- Ⓢ WATER HOOKUP



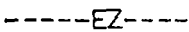
SAMPLING GRID (100'x100')  
WITH GRID NUMBER AND GEOGRAPHIC REGIONS CORRESPONDING TO SAMPLE ID (EX. 2-C, 2-NW, 2-NE, 2-SW, 2-SE)



GRID LOCATION REMOVED



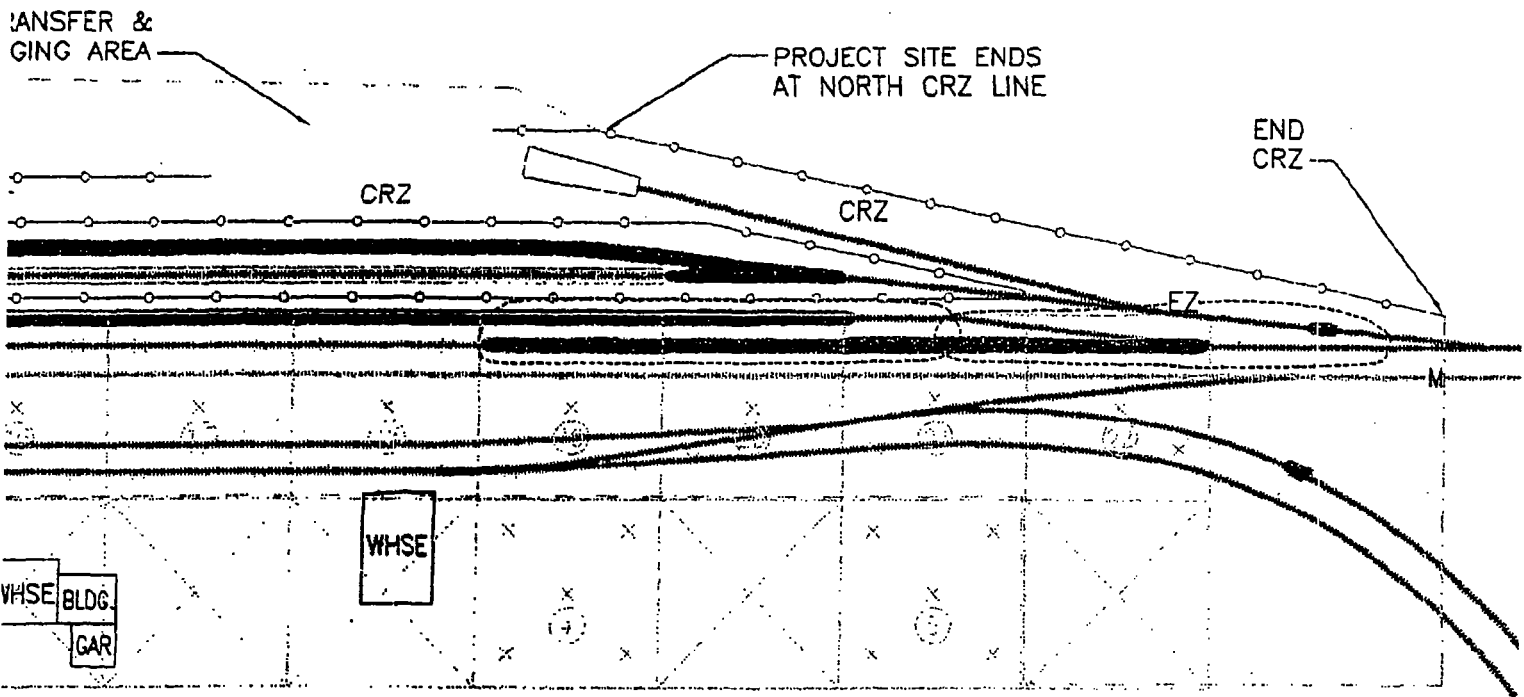
CONTAINMENT REDUCTION ZONE (CRZ)



EXCLUSION ZONE



PROJECT SITE (LEVEL D PPE REQUIRED)



## **NOTE:**

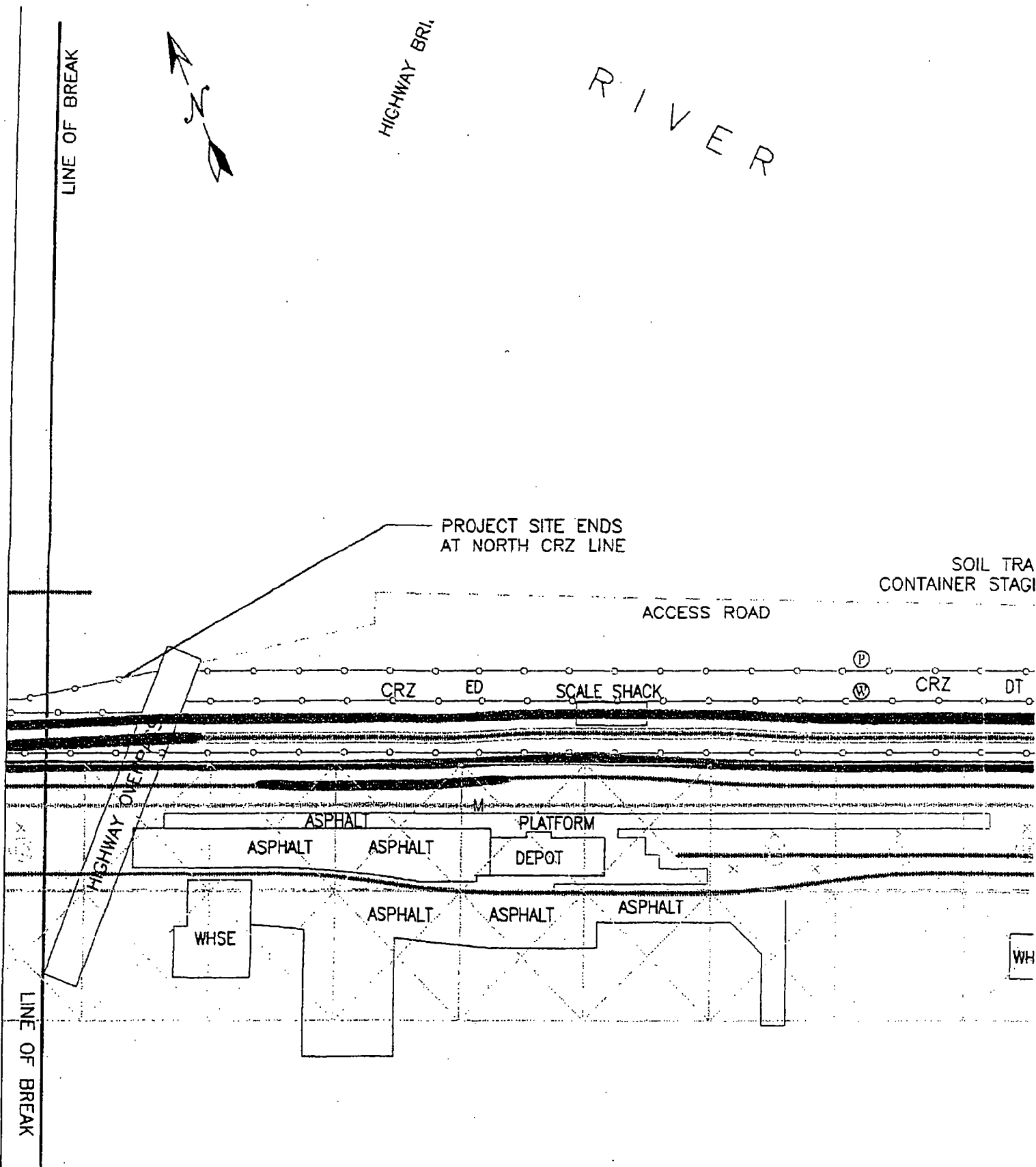
CLEANUP WILL PROCEED ON TRACKS 1 AND 2 FIRST MOVING EAST TO WEST AND THEN ON TRACKS 3 AND 4 MOVING EAST TO WEST. CRZ BOUNDARY WILL MOVE FROM BETWEEN TRACKS 2 AND 3 TO NORTH OF TRACK 4. EZ BOUNDARIES SHOWN ON MAP PORTRAY TWO EXAMPLE OVERLAPPING EZ BOUNDARIES. ADDITIONAL EZ BOUNDARIES WILL BE CONSTRUCTED IN SIMILAR FASHION TO WEST IN THE SAME CLEANUP PATH DESCRIBED ABOVE.

0 100  
APPROXIMATE SCALE IN FEET

BNSF RAILWAY STATION MAP  
LIBBY, MT.

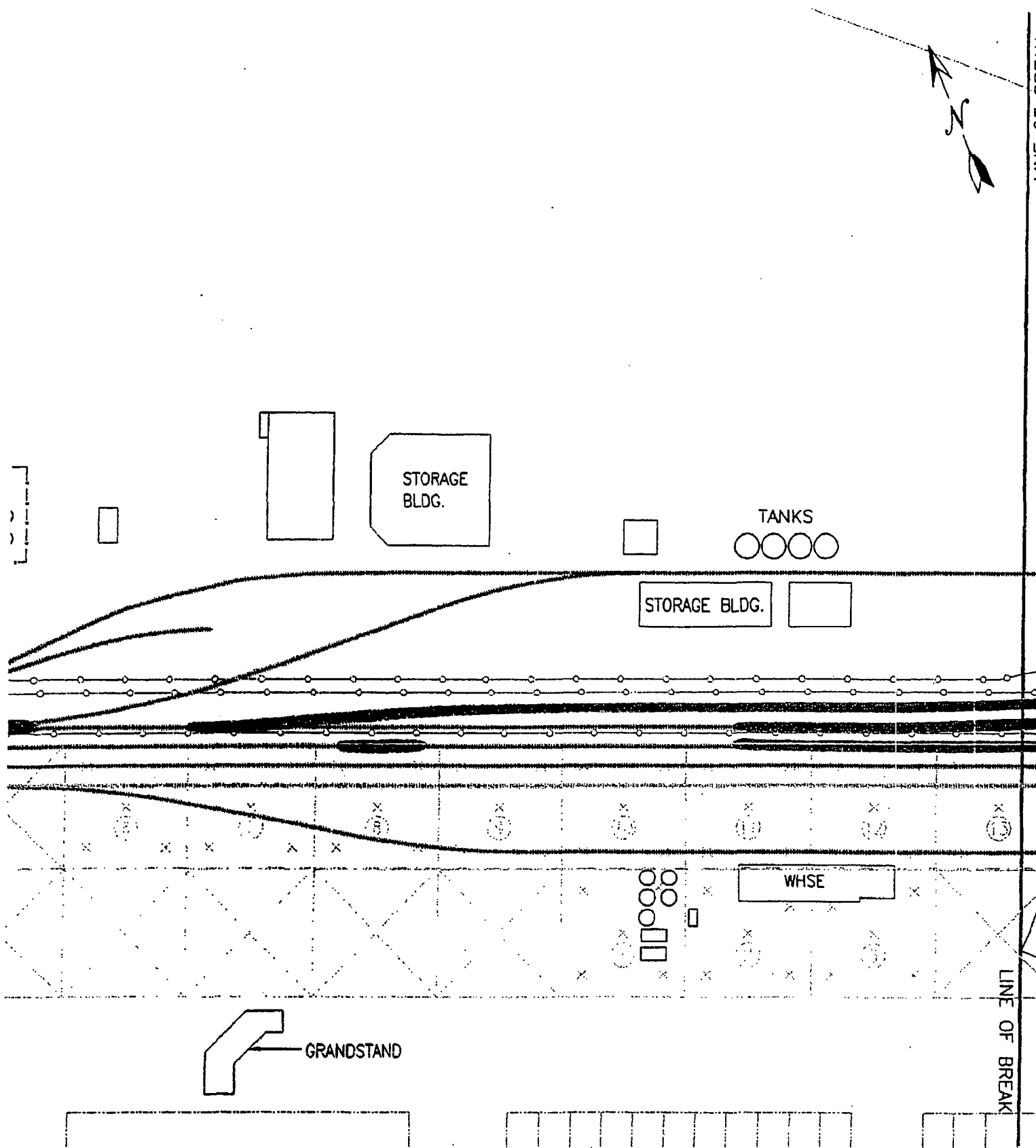
Drawn by : SES  
Checked By : G.M.C.  
Project No. : 5539.002-1  
File Name : 5539002-1.DWG  
Revision No. : 2  
Date : 10/14/02

FIGURE  
1



EAST AREA  
FIELD SAMPLING PLAN/  
MAP OF VISIBLE BIOTITE  
BNSF RAIL YARD  
LIBBY, MT.





0 100  
APPROXIMATE SCALE IN FEET

BNSF RAILWAY STATION MAP  
LIBBY, MT.

Drawn by : SES  
Checked By : G.M.C.  
Project No. : 5539.002-1  
File Name : 5539002-1.DWG  
Revision No. : 2  
Date : 10/14/02

FIGURE  
2

LEGEND:

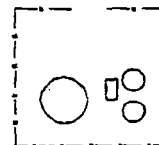
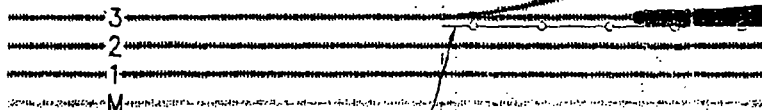
----- FENCE

----- RAILROAD TRACKS WITH ASSIGNED  
NUMBER----- M ----- MAIN LINE RAILROAD TRACKS  
(3-4" DIAMETER QUARTZITE  
BALLAST AT LEAST 1-FOOT DEEP----- PARKED TRAIN AT TIME  
OF INSPECTION● VISIBLE BIOTITE MARKED WITH RED  
SURVEYOR'S WHISKER

NW	NE
	C
SW	SE

SAMPLING GRID (100'x100')  
WITH GRID NUMBER AND GEOGRAPHIC  
REGIONS CORRESPONDING TO SAMPLE ID'S  
(EX. 2-C, 2-NW, 2-NE, 2-SW, 2-SE)

GRID LOCATION REMOVED

BOUNDARY OF TRACK  
3 AND 4 CRZBOUNDARY OF TRACK  
1 AND 2 CRZ

TOOL HOUSE



WEST AREA  
FIELD SAMPLING PLAN/  
MAP OF VISIBLE BIOTITE  
BNSF RAIL YARD  
LIBBY, MT.



## 2.0 SAMPLING AND ANALYSIS PLAN

### 2.1 SAMPLE CUSTODY, DOCUMENTATION, PACKAGING, AND SHIPPING

Sample custody includes the identifying, labeling, packaging, and transporting of samples collected during this investigation. The chain-of-custody record is used as physical evidence of sample custody and control, and provides the means to identify, track, and monitor each individual sample from the point of collection through final data reporting. Each sample will be identified by a unique code. Sample details will be noted in the sampling log sheets and field log books.

### 2.2 AIR MONITORING

Personal air samples will be collected inside the EZ and will be collected with a low volume battery pump for each person sampled. The samples will consist of a 30 minute excursion sample and sampling representative of full shift exposure. Samples will be analyzed using the NIOSH 7400 method. The action level for which corrective action will take place inside the EZ is 0.1 f/cc. This corresponds to the OSHA permissible exposure limit (PEL) criteria for work in an environment with no respiratory protection

Five background ambient air samples will be collected roughly equidistant across the length of the yard the day before the scheduled start of the project. The pumps used for the project will be A.P. Buck Buck Basic-12 battery-operated high volume pumps. These pumps have a capability to pull approximately 6 liters per minute over a 10-hour time period.

Ambient air samples during the removal action will be collected at five perimeter-monitoring sites per vacuum truck. Should vacuum trucks operate side-by-side along two adjacent tracks, then only one set of 5 perimeter air monitoring sites will be utilized.

Air samples will be collected daily at the perimeter of the each Exclusion Zone. Three sites will be located down wind of the EZ; two sites will be located up wind of the EZ. The samples will draw a minimum of 1,200 liters of air to achieve the desired minimum detection limits.

A weather station located on the exterior of the BNSF Section House building in the southwest corner of the yard will be checked twice daily with wind speed and wind direction logged. A windsock will be used to evaluate wind direction daily to determine location of upwind and downwind samples. Based on historical wind direction data for Libby, Montana, wind is to the south. Additional perimeter locations will be added during the course of the project if a sustained

shift in wind direction occurs after the first five sampling sites have been established. The actual locations of perimeter air samples will be selected in the field and surveyed using a GPS instrument and indicated on the Site map. Ambient air samples will be submitted to either Clayton Laboratories of Atlanta Georgia or EMSL Laboratories for analysis by Transmission Electron Microscopy (TEM) by the NIOSH 7402 method.

In addition to the air sampling sites around the perimeter exclusion zones, air monitoring sampling will be conducted on the north boundary of the project site, east of the scale shack to address several residences located beyond the north access road boundaries. Two air sampling stations will be established between the soil transfer area and the residences to the north. Sampling of these stations will include periods of soil transfer, at a minimum. These air samples will also be submitted to either Clayton Laboratories or EMSL Laboratories and TEM analyzed by NIOSH 7402 method.

### 2.3 SYSTEMATIC SOIL SAMPLING

As is shown on the Figures in Section 1.0, visible hydrated biotite is present along portions of the rail lines. Following the removal action, discrete soil samples will be collected at 50-foot intervals along the rail lines and a portion of four such samples will be composited (ie. One composite sample per 200 feet of track length) and sent to EMSL laboratories for analysis. Samples will be collected at a depth of 6-inches below grade. At each sample location, a metal nail with yellow plastic flagging will be driven into the ground. Soil samples will be collected with a stainless steel trowel. Samples will be placed in one quart sized recloseable plastic freezer bags. Discrete samples will be submitted to the laboratory and held pending results of the composite samples. Discrete samples will be analyzed if the corresponding composite sample is positive for asbestos (Libby amphibole detected).

At the end of the project but prior to demobilization of vacuum truck equipment, a 100 foot spacing grid system will be surveyed in and the sampling will be performed in similar fashion to our October 2001 investigation. This will consist of collecting 5 discrete soil samples within each grid (NE, NW, SE, SW and Center) from a depth of 6-inches, saving a portion of each discrete sample to create a composite, and then shipping the discrete and composite samples to the laboratory. Upon receipt at the laboratory, the discrete samples of one grid will be held pending analysis of the composite sample from that grid. Should any detectable Libby amphibole (tremolite/actinolite series) by the PLM method 9002, Issue 2 be observed in composite samples, the discrete samples will be analyzed to determine which discrete samples within the grid show detectable concentrations of Libby amphibole.

These areas would be re-vacuumed in a 25 foot radius around the sample locations with detectable results, excluding grids sampled previously without detecting Libby amphibole. New confirmatory samples will be collected to a depth of 1 foot or to a lesser depth considered to maintain the integrity of rail and ties. If these new confirmatory samples contain detectable Libby amphibole, an addendum to the work plan will be prepared to address the disposition of these soils. Each sample point will be located by GPS. An AutoCAD® map of the main line, associated tracks, buildings and roads will be constructed to scale, and the sample locations will be shown on the map.

The SOPs that are specific to surface soil sampling were developed from the USEPA 540-R-97-028 document entitled *Superfund Method for the Determination of Releasable Asbestos in Soils and Bulk Materials*, which is Appendix 15 of the Quality Analysis and Program Plan (QAPP) for the USEPA Libby Mine project (a copy is available at <http://www.epa.gov/unix0008/superfund/libby/lbbyqap.html>). The following SOPs will be used for the soil sampling:

- Surface soil sampling log (Appendix 8 to the QAPP);
- Surface soil sampling (Appendix 3, Section 5.2.3 to the QAPP);
- Photo documentation of sampling (Appendix 6 to the QAPP).

Sample analysis will be by others. Sample preparation by the laboratory will follow USEPA Region 8 standards for homogenizing surface soil samples (Appendix 13 of QAPP). Samples will be analyzed using a combined PLM/TEM analytical method; the coarse fraction of each sample will be analyzed using PLM methods. The fine fraction of each sample will be analyzed using TEM methods.

## 2.4 SOIL CHARACTERIZATION SAMPLING

Required soil characterization samples will be collected and analyzed for requested parameters, and soils will be profiled for disposal.

## 2.5 OPERATION AND MAINTENANCE ACTIVITIES

All visible hydrated biotite will be removed. Assuming all final grid soil confirmation samples show no detectable Libby amphibole, and for the purposes of this final remedial action plan (FRAP), no additional operation and maintenance activities are anticipated at this time.

## 2.6 ADDITIONAL REMOVALS ACTION WORK PLAN

All visible hydrated biotite will be removed. Should any detectable Libby amphibole be detected in soil samples collected at a depth below which additional removal would potentially undermine ties and rail, an addendum to the work plan will be prepared that will address any remaining soils containing Libby amphibole.

**APPENDIX E**

***KEY PERSONNEL RESUMES***

**Daniel J. Westrum**4716 Weston Hills Drive  
Eagan, MN 55123Home Phone 651-681-1462  
Email - westrum@usfamily.net**QUALIFICATIONS**

I am certified industrial hygienist with over 17 years of health and safety consulting experience. My experience has included nearly all aspects of OSHA compliance including exposure monitoring and sampling, compliance audits, program development, and training.

Clients have included federal government (Army Corps of Engineers, FAA, US Postal Service, and Veteran's Administration), state and local governments, architects, contractors, engineers, health care providers, insurance companies, large and small industry, law firms, and transportation.

I served as a corporate health and safety director at Maxim Technologies, Inc., safety committee member at Braun Intertec, and the Office Safety Coordinator at HDR Engineering, Inc.

**WORK HISTORY**

2001-Present

Principal, Environmental Health, Inc.

I am the sole proprietor of Environmental Health, Inc. I have aided with logistical arrangements for a client's their mobile medical monitoring program, collected exposure samples and performed noise monitoring. Additionally, I have written material safety data sheets and provided consultation for construction activity at a site where hazardous materials were present.

1997-2001

Senior Industrial Hygienist, HDR Engineering, Inc. - Senior Industrial Hygienist, Braun Intertec Corporation

I was responsible for performing investigations and health and safety audits, training, and project management for OSHA-compliance and indoor air quality projects. The highlights of my work are as follows:

- Collected exposure samples for chemicals and noise. Data was interpreted and recommendations for abatement were provided in a written report to clients.
- Developed numerous OSHA-required plans and programs: these have included process safety management plans for highly hazardous chemicals and associated training.
- Developed site safety plans for hazardous waste site work and provided all levels of the associated hazardous waste site operations training and emergency response training.
- Performed compliance audits for all areas of OSHA compliance, including; asbestos, confined space entry, electrical safety, emergency response, fire safety, housekeeping, lead, lockout/tagout, noise exposure, personal protective equipment, powered industrial trucks, program development, record keeping, training, and working and walking surfaces.
- Performed microorganism investigations for insurance companies and office building owners. Duties have included air, bulk, and surface sample collection and writing reports to the client with data interpretation and recommendations for abatement.

- I served on the Safety Committee at Braun Intertec and serving as the Office Safety Coordinator (OSC) for HDR. OSC duties include conducting health and safety committee meetings, OSHA-compliance training and record keeping, accident and injury record keeping and reporting, office safety audits, and medical surveillance coordination. The office safety program went from a program the met requirements to an exemplary program while I was the OSC.

1991-1997 and  
1985-1988

Senior Industrial Hygienist-Health and Safety Director, Twin City Testing-Huntingdon Engineering-Maxim Technologies

I was responsible for project management of OSHA-related and indoor air quality work. My work included the following:

- Designed and oversaw asbestos and lead abatement projects.
- Conducted exposure studies and audits related to OSHA compliance for external clients and internally. I performed workplace exposure and microorganism sampling and provided reports with data interpretation and recommendations for abatement.
- Provided the following training to external clients and internal clients: confined space entry, forklift operator, hazard communication, hazardous waste site operations, personal protective equipment, and respiratory protection.
- Conducted health and safety audits of 500 to 600 FAA facilities.
- Provided expert testimony for Workers' Compensation cases.
- I was the Health and Safety Director for Maxim Technologies' northern region that included approximately 500 employees. Duties included OSHA-compliance training, record keeping, accident and injury record keeping, office safety audits, Workers' Compensation program, implementation of the drug and alcohol testing program, and medical surveillance coordination.

I was also involved with the following:

- Taught courses at Hennepin Technical College (Eden Prairie), Minnesota Safety Council, and the Midwest Center for Occupational Safety and Health.
- Served on the advisory committee for the Hennepin Technical College Environmental Chemistry program.

1988-1991

Office Manager-Department Manager, Delta Environmental Consultants, Inc. Managed 8 to 12 staff, project manager, and responsible for field work and training. I performed asbestos and lead inspections. As a project manager, developed abatement specifications, held pre-bid and progresses meetings, acted as the owner's representative and oversaw abatement projects. I performed OSHA-compliance monitoring and indoor air quality investigations.

1976-1980

Hospital Corpsman, US Navy

I served as an emergency medical technician and ocular technician. I was awarded letter of commendation from the Commanding Officer of the Naval Regional Medical Center-Oakland for correctly diagnosing and timely referral of a patient with an acute eye condition. Was "Sailor of the Month" for the Naval Regional Medical Center Regional Clinic-Moffett Field. I was honorably discharged.

**Daniel J. Westrum**

4716 Weston Hills Drive  
Eagan, MN 55123

Home Phone 651-681-1462  
Email - westrum@usfamily.net

**EDUCATION**

1984 BA, Augsburg College  
Physics major with a math minor  
1990 MS, University of Minnesota  
Environmental Health with an industrial hygiene emphasis

**LICENSES & CERTIFICATES**

- American Board of Industrial Hygiene, Certified Industrial Hygienist (1991).
- Certificates for a variety of short courses including fungi sampling and evaluation, professional writing, ergonomics, and process safety management.
- Formerly certified as an asbestos inspector, management planner, designer, and lead inspector.

**INTERESTS & ACTIVITIES**

- Coached hockey for the Rosemount and Eagan hockey associations for a total of nine years. Currently a Director with the Eagan Hockey Association.
- Coached baseball and soccer for three seasons in Eagan.



*Experience Profile*  
**Don Clabaugh, PE**  
Principal Engineer

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**EDUCATION**

M.S. Engineering Geology, University of Akron, 1984

B.S. Engineering Geology, University of Kansas, 1983

**PROFESSIONAL AFFILIATIONS**

Professional Engineer (Civil/Sanitary) in Washington, Oregon, Idaho, Kansas, Illinois and Alaska  
National Groundwater Association

**EXPERIENCE SUMMARY**

Mr. Clabaugh has 18 years of experience as an environmental consultant. He is currently Vice President in charge of Western Operations, and manages projects and personnel in EMR's Denver, Fort Worth and Seattle offices. Mr. Clabaugh has specific technical expertise in civil engineering, regulatory compliance and litigation support, and is a recognized expert in the field of hydrogeology. He was the invited moderator for the Ground water Geochemistry Conference sessions on ground water monitoring well materials compatibility hosted by the National Ground water Associations. Mr. Clabaugh also was a reviewer for the "Green Book" (the US EPA guidance manual on ground water monitoring).

Mr. Clabaugh was the Project Manager for the RI/FS on the largest operable unit of the largest NPL site in the country; the Old Works East Anaconda Development Area of the Clark Fork NPL Site in Anaconda, Montana. At that site and other mining-related sites, Mr. Clabaugh used his technical expertise in unsaturated zone hydrology, mineral- and hydrogeo-chemistry, groundwater and colloid transport of metals, and hydraulic design to complete the RI/FS and remedial design.

Mr. Clabaugh has specific technical expertise in the following areas:

- Conducting remedial investigations and feasibility studies (RI/FS), risk-based corrective actions and Brownfields projects with emphasis on risk- or remedial-action focused cost effective solutions.
- Remedial design of well and trench systems, soil vacuum extraction (SVE), air sparging, steam injection vapor extraction (SIVE), slurry walls, solidification systems, and soil and water treatment.
- Compliance and monitoring programs for federal and state regulations including CERCLA, TSCA, RCRA, CWA, UST, MTCA, GWQS and SPCC.
- Water supply development and well design. Siting new ground-water supplies in buried valley systems using surface geophysics followed by boring programs and aquifer tests. Design and construction of vertical or horizontal (radial collector) wells to minimize operation and maintenance costs.
- Permitting, design and operation of RCRA Subtitle D and municipal landfills. Use of statistical/chemical equilibria evaluations to minimize ground-water monitoring requirements.

Don Clabaugh, PE  
Principal Engineer

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## **SELECTED PROJECTS**

### **Whiting Refinery/J&L Landfill Remedial Design, Whiting, Indiana.**

Remedial Engineer \ Project Manager. Designed interceptor trench systems, recovery wells, dual phase extraction wells, and well point systems for recovery of free phase and dissolved hydrocarbons and hydraulic control of the site boundary at a 700-acre CERCLA NPL refinery/landfill. Efforts included Engineering Evaluation/Cost Analysis (EE/CA) and FS preparation, geochemical modeling, preparation of master remediation plans, pumping test analysis, hydraulic design, and performance modeling.

### **Motorola Mountain-Top Generator ASTs, Schaumburg, Illinois.**

Completed investigation and cleanup of aboveground storage tank (AST) spills, including soil and groundwater contamination, at sites ranging from Florida to Alaska.

### **Virginia Wood Preservers (Rentokil) RI and EE/CA, Richmond, Virginia.**

Conducted an RI at an operating NPL status wood treating plant. Contaminants were creosote, pentachlorophenol and copper chromate arsenate. Geophysics, soil and groundwater sampling, pumping tests and groundwater modeling were utilized to evaluate fate and transport. Evaluated remediation including bioaccumulation, excavation, and interceptor trench systems. Remedial costs were compared in an EE/CA.

### **UST Site Remedial Design, various sites in Washington, Oregon, Kansas, Missouri, and Nebraska.**

Project Manager/ Senior Engineer for Amoco, Texaco, Time, Sinclair and others. Designed and supervised installation of recovery wells, interceptor trenches, soil vacuum extraction and air sparging systems for over 36 sites. Managed up to 14 staff performing site investigations of petroleum contamination by soil gas survey, geoprobe, boring and well installation and sampling at over 130 sites.

### **RCA/Thomson Circleville Facility RI, Circleville, Ohio.**

Senior Hydrogeologist. Investigated lead contamination of groundwater at a CERCLA site, including hydrostratigraphic analysis, groundwater treatment contingency planning, and transport and fate of dissolved and colloidal lead in groundwater.

### **Riverfront Wellfield Contamination, Sioux City, Iowa**

Project Manager. Delineated the extent of PCBs and diesel fuel, and developed a workplan to further characterize the site and develop remedial measures. Geophysical and soil gas surveys and a groundwater monitoring program were utilized to monitor contamination entering the wellfield and to provide water supply protection.

### **Millard Avenue Expansion, Toledo, Ohio**

Senior Engineering Geologist. Completed a CERCLA-format workplan, QAPP and RAO for expansion of a road through an industrial area with soil and groundwater contamination from numerous landfills, CERCLA sites and the largest active hazardous waste landfill in the country. DOT regulations required compliance with CERCLA regulations and guidelines with agency review and negotiations. Used a soil gas survey and hydrostratigraphic analysis to preliminarily characterize the site.

Don Clabaugh  
Principal Engineer

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**Dura Road Landfill, Toledo, Ohio**

Senior Engineering Geologist. Hydrogeological investigation for an RI/FS at a pre-RCRA landfill site. An extensive geophysical exploration was conducted to delineate the extent of waste. PCB's, oily-wastes, organic solvents and metals were detected in groundwater and multiple soil zones using a special drilling and casing program to minimize cross-contamination of soil zones.

**CECOS Aber Road Facility, Clermont County, Ohio**

Project Manager \ Senior Engineer. Conducted a comprehensive hydrostratigraphic analysis and waste cell design evaluation at a large TSCA/RCRA hazardous waste disposal facility. Review included investigation of groundwater contamination, monitoring and statistical evaluation procedures and results, HDPE-liner installation in freezing temperatures, cell closure methods, and drum handling and waste treatment facility decommissioning procedures. Provided litigation support and expert witness service.

**Central Ohio Landfill, Mount Vernon, Ohio**

Project Manager. Modified closure plan was completed for an existing landfill nearing capacity. Design included monitoring systems, abatement of leachate springs with horizontal gravity-fed screens, routing and treatment of leachate, and a cover liner.

**Model Landfill, Columbus, Ohio**

Senior Engineering Geologist. Conducted a geotechnical and hydrogeological investigation for a modified closure plan. Developed a groundwater flow and solute transport (numerical) model to evaluate various remedial designs for management of the leachate and cover lining.

**Triangle Landfill, Chillicothe, Ohio**

Senior Engineering Geologist. Conducted a subsurface and geotechnical investigation for expansion of an existing landfill. Surface geophysics and test borings were used to determine the amount of suitable cover material and the proper configuration for the expansion cell.

**Knox County Proposed Landfill, Mount Vernon, Ohio**

Project Manager. Completed a geotechnical and hydrogeological evaluation for the permit-to-install application for a municipal landfill site. Designed a groundwater monitoring system and multiple waste cells. Utilized surface geophysics and borings.

**Marion County Landfill, Marion, Ohio**

Project Manager. Completed geotechnical and hydrogeological studies for the siting and design of a municipal landfill. Surface geophysics, pumping tests and a groundwater model were utilized. Installed the groundwater monitoring system, and designed the waste cells with a slurry cut-off wall, synthetic liner and leachate collection system.

**Henrico County Landfill, Richmond, Virginia**

Project Hydrogeologist. Completed geophysical and hydrogeological studies to estimate the fate and transport of leachate from an existing landfill.

**Hillyard Dross RI/FS, CAP, Spokane, Washington.**

Project Manager and Senior Engineer for a BNSF leasee site with over 100,000 cubic yards of aluminum dross and associated contaminated soil. The aluminum dross piles contain concentrations of fluoride, nitrates, chloride and ammonia that are of potential concern for

Environmental Management Resources, Inc.

Don Clabaugh  
Principal Engineer

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human health and ecological receptors. Completed an RI/FS and engineering. PRP negotiations are ongoing, and construction is expected for Fall 2001. Fate and transport evaluations, and a baseline risk assessment, were completed to determine whether the presence and concentration of contaminants posed a significant risk to human health or the environment. Alternatives that were considered in the FS were: no action; institutional controls with long-term ground-water monitoring; excavation with off-site disposal; and, on-site containment beneath a multi-media cap. The Engineering Design Report detailed the specifications for the remedial solution, which was to install a limited-use landfill for the aluminum dross and contaminated soil.

**Portland ANGB RI/FS, Portland, Oregon.**

Managed over \$2.5M in work orders completing Remedial Investigation/Feasibility Study (RI/FS), Engineering Evaluation/Cost Analysis (EE/CA) and Interim Removal Action (IRA) under the Department of Defense (DOD) Air National Guard (ANG) Installation Restoration Program (IRP) for a site with soil and groundwater contaminated by VOCs, SVOCs and metals. Chlorinated solvents in groundwater are present at elevated levels upgradient of the City of Portland wellfield. Investigation included hydropunch, boring and monitoring well installation and sampling, treatability studies (in-well aeration) and aquifer testing. Data evaluation included ground-water and solute transport modeling, assessment of natural attenuation and risk assessments. EE/CA evaluation included excavation, SVE, bioremediation and treatment methods for soil contaminated with chlorinated solvents. FS included in-well aeration, natural attenuation, and containment strategies.

**Southern Pacific Sacramento Rail Yard Interim Remedial Action, Sacramento, California.**

Project Manager for a CERCLA RI/FS on the Lagoon Groundwater operable unit, and Senior Engineer on the South Plume Interim Remedial Action program. The site is currently the largest Brownfields Redevelopment site on the west coast. Tasks included sampling and aquifer testing plans, soil and groundwater data collection and evaluation, design of an 8 well extraction system, permitting (NPDES) for surface water discharge, preparation of RI Workplans, and preparation of an RI.

**Smelter Hill NPL Site OW/EADA operable unit RI/FS, Anaconda, Montana.** Project Manager for an operable unit of the Clark Fork NPL Site. Completed an RI/FS for the 1,340-acre Old Works/East Anaconda Development Area CERCLA NPL smelter site. Completed data collection and evaluation activities for a historic copper mine with soil and groundwater contamination by metals. Site considerations included disposition of over 1.4 million cubic yards of waste materials, stabilization of waste-impacted soils, evaluation of vadose zone transport at a semi-arid site, and complex stream-aquifer (transport and fate) relations. Responsible for negotiations with EPA and MDHES, and a related project completing remedial action objectives and feasibility of groundwater treatment systems.

**McChord Air Force Base SIVE System, Washington**

Remedial Engineer responsible for senior review of system design and modeling for implementation and pilot testing of a Steam Injection Vapor Extraction (SIVE) system for extraction of volatile organic contaminants from the unsaturated zone.

*Experience Profile*  
**David L. Welch**  
Project Geologist

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**EDUCATION**

B.S. Geology, Western Washington University, Bellingham, WA, 1984

**REGISTRATIONS/ CERTIFICATIONS**

International Fire Code Institute-Certified Washington UST Site Assessor  
AHERA Asbestos Building Inspector  
AHERA Asbestos Management Planner  
AHERA Asbestos Abatement Contractor/Supervisor  
AHERA Asbestos Project Designer  
California-OSHA Certified Asbestos Consultant  
NIOSH 582 Course: Sampling and Evaluating Airborne Asbestos Dust  
EPA-Accredited Lead Inspector/Risk Assessor Training Course  
NITON XRF 7000 Series Training Course  
EPA Lead Risk Assessor (WA, AK, ID, NE)  
Oregon Lead Risk Assessor

**FIELDS OF SPECIALIZATION**

- ◆ Asbestos Project Design
- ◆ Asbestos Operation and Maintenance (O&M) Plans
- ◆ Asbestos Operation and Maintenance (O&M) 16 hour Training Course Instructor
- ◆ Asbestos Building Inspections and Abatement Oversight
- ◆ Asbestos Air Monitoring and PCM Analysis by NIOSH 7400
- ◆ Computer Aided Drafting (CAD)
- ◆ Lead-based paint Inspections/Risk Assessments
- ◆ Hydrocarbon Assessment/Remediation
- ◆ State RCRA Program: Model Toxics Control Act (MTCA) Cleanup Regulation Program, State of Washington: Remedial Investigation/Feasibility Studies (RI/FS)
- ◆ Independent Remedial Action Process (IRAP)
- ◆ Dangerous Waste Manifests
- ◆ Phase I Environmental Site Assessments under ASTM "Due Diligence"
- ◆ Phase II Environmental Site Assessments

**REPRESENTATIVE PROJECT EXPERIENCE**

Mr. Welch has fourteen years experience in the environmental field. Mr. Welch has served as Project Manager/Project Geologist on assignments related to asbestos building inspections and abatement oversight, asbestos project design specifications, asbestos air monitoring, asbestos Operation and Maintenance (O&M) plans and training, assessment and remediation of contaminated soil and groundwater, Phase I Environmental Site Assessments and CADD design. His asbestos experience includes managing projects in Washington, Oregon, Idaho, Montana, Arizona and California. His geotechnical experience has been focused on state-equivalent RCRA, and UST programs in Washington, Oregon, California and Nevada. Mr. Welch has primary experience in hydrocarbon contamination but has also managed projects relating to mineral spirits, PCE, and lead. Mr. Welch has been involved with a variety of traditional and innovative remediation technologies, including pump and treat systems, vapor extraction, bio-enhanced vapor extraction, air sparging and aboveground bioremediation cells. Mr. Welch has experience in supervising drilling;

assessment projects utilizing hollow stem auger, mud rotary and air rotary technology, and installation of groundwater monitoring wells, recovery wells, and vapor extraction wells.

#### **Relevant Projects including Job Title and Job Responsibilities**

- **Independent Remedial Action, Spokane, Washington** - Managed an Independent Remedial Action under MTCA on a former foundry site with extensive lead contaminated soils. Conducted subsurface characterization and remedial investigation on site. Collected data from quarterly groundwater monitoring program on site that indicated lead was not leaching into a shallow groundwater table within the zone of highest soil contamination. Cleanup alternatives were evaluated with a multi-layer impermeable cap and imposed institutional controls proposed for a long-term solution.
- **Subsurface Characterization/Remedial Action, Bellevue, Washington** - Assisted in field assessment, modeling and reports pertaining to a release of tetrachloroethane (PCE) into subsurface soils at a former dry-cleaning facility. The project was concurrent with a contracted development of the property into an upscale shopping center. The project underwent an IRAP coordinated with the Washington State Department of Ecology (WDOE).
- **System-Wide Asbestos Program, Major Railroad** - Conducted asbestos inspections, re-inspections, pre-design survey, CADD design, design specification manuals, project site management/air monitoring and building inspection reports for project sites in 22 states.
- **System-Wide Vermiculite Characterization and Removal Program, Major Railroad** - provided expertise in developing building inspections, pre-design surveys, CADD design, design specifications manuals, and project site management/air monitoring for managing vermiculite in 22 states.
- **Asbestos Management-Major Bank** - Project management, survey, design and project site management during removal of asbestos-containing materials at four bank branches undergoing remodel in the Puget Sound area. Work was conducted at night during off hours and had special security access protocols that were adhered to.
- **Asbestos Management - Truck Manufacturer** - Project management, facility survey, design specifications, Operation and Maintenance Plan, awareness training seminars at Seattle plant. Survey required lift access coordination and site safety considerations.
- **Asbestos Management - Multi-tenant Commercial Building Owner** - Project management, facility survey, design specifications manual, proposed Operation and Maintenance Plan and awareness training seminars. Survey was conducted for existing owner as part of an interested buyer's request. Project conducted concurrently with independent remedial action for this former bulk fuel terminal. Proposed multiple options and costs for asbestos management/removal depending on future site use.
- **Asbestos Management - Major Railroad** - designed and implemented a 16 hour Operation and Maintenance (O&M) training program tailored for structures and telecom personnel
- **Phase I ESA, Asbestos Building Inspection, Project Design Specifications and Project Site Management/Air Monitoring - Industrial Building Owner Partnership** - Conducted Phase I ESA/AHERA building inspection for design and removal of all friable asbestos-containing materials. The project was conducted within the proposed budget and schedule.

*Experience Profile***Scott J. Rhen**

Asbestos/Lead Inspector/Air Monitoring Professional  
Project Specialist

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**EDUCATION/REGISTRATIONS**

B.S. Geology, (1984) University of Nebraska - Lincoln  
AHERA Accredited Contractor/Supervisor  
AHERA Accredited Inspector/Management Planner  
Nebraska Law, Rules, and Regulations Governing Asbestos Projects Course  
Sampling and Evaluation Airborne Asbestos Dust-NIOSH 582 Equivalent Course

**CERTIFICATIONS/MEMBERSHIPS**

Air Monitoring Professional - Missouri  
EPA-accredited AHERA Contractor/Supervisor — multiple states  
EPA-accredited AHERA Inspector — multiple states  
EPA-accredited AHERA Design — multiple states  
AIHA Asbestos Analysis Registry  
Radiation Safety Training - XRF  
OSHA 40-hour Hazardous Waste Site Operations Worker/Supervisor  
Phase I Environmental Site Assessment Training  
Geological Society of America

**FIELDS OF SPECIALIZATION**

- ▼ Asbestos Inspections
- ▼ Air Monitoring/Industrial Hygiene
- ▼ Asbestos Project Design
- ▼ Lead-based Paint Testing Sampling and Detection
- ▼ Radiation Safety
- ▼ Radon Sampling

**RELEVANT EXPERIENCE**

Mr. Rhen has 14 years of environmental expertise in a broad range of project activities. He has performed field duties and managed asbestos inspections, project design and industrial hygiene air monitoring for projects ranging from major multi-state, nationwide system-wide industrial plant facilities to individual single-family residences. He has supervised projects involving monitoring for airborne particulates, asbestos removal projects and analytical laboratory processes. He has met qualification and licensing requirements and performed field work activities in at least 19 states.

Mr. Rhen is a Quality Assurance team leader responsible for reviewing air sample analytical tests performed by 14 project field technicians. In this role, Scott provides routine re-training and instruction for laboratory technicians to continually monitor and improve performance quality and education.

He has monitored air for lead and coal dust during construction and demolition activities. He performed as the air monitoring professional on an \$800,000 remediation at a State of Montana Superfund asbestos cleanup. He has tested school systems in Iowa for Radon and performed school AHERA initial and re-inspections.

Mr. Rhen also participated in a lead-based paint survey utilizing advanced Niton XRF technology and bulk paint chip sample collection and analysis to survey 12,000 rail car units in 1998.

Mr. Rhen has experience in soil and groundwater contamination investigations, supervision of groundwater monitoring well installations and remediation system operation. He has conducted groundwater measurements at an EPA CERCLA Superfund site and has extensive experience working on railroad yards.



May 6, 2003

Jim Christiansen  
EPA Region VIII  
999 18<sup>th</sup> Street, Ste 300  
Denver, CO 80202

RE: Additional Resume Profiles  
BNSF Libby Railyard Biotite Removal, Libby, MT

Dear Mr. Christiansen,

Environmental Management Resources, Inc. (EMR) is pleased to provide you with resume profiles for Robert Williams and me. Robert and I have been added to the EMR team for the Burlington Northern Santa Fe Railway Company (BNSF) project located in Libby Montana. I will be assuming the role of project manager while Robert adds insight as EMR's Certified Industrial Hygienist.

Robert and I are excited to lend our expertise to this project. Should any questions arise please feel free to contact me in the office at 612-789-2642, or via my cell phone at 612-867-8841.

Sincerely  
*Environmental Management Resources,*

  
Tanya Drake  
Operations Manager

Enclosures

Cc: Dave Smith (BNSF, Helena, MT)

2003 MAY 12 AM 6:57  
EPA REGION VIII  
SUPERFUND BRANCH



## **Experience Profile**

### **Tanya L. Drake**

Senior Geologist/Operations Manager - Minneapolis

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#### **EDUCATION**

B.S. Earth Science - Geology, Saint Cloud State University

#### **TRAINING/CERTIFICATIONS**

IA Certified Groundwater Professional #1949  
40 Hour OSHA Training per 1910.120  
40 Hour NIOSH 582-E  
24 Hour Minnesota Asbestos Building Inspector  
40 Hour Minnesota Asbestos Site Supervisor  
Minnesota Air Monitoring Technician Course  
Radiation Safety and Measurement Technology  
Red Cross First Aid Training  
Red Cross CPR Training  
8 Hour On-Track Safety

#### **PROFESSIONAL AFFILIATIONS**

Minnesota Groundwater Association

#### **FIELDS OF SPECIALIZATION**

Site Investigations  
Regulatory Permitting  
Regulatory Reporting (RCRA, TSCA, AHERA)  
Compliance Audits (SPCC, SWPP)  
Subsurface Investigation  
Groundwater Modeling  
Asbestos Project Oversight

#### **QUALIFICATIONS SUMMARY**

Ms. Drake is a solid project manager and technical assistant with strong developmental and organizational skills and over eight years of real-time experience. She has served as project manager on various storage tank sites for retail petroleum, government, and railroad clients. Her field responsibilities have included collecting and field screening soil and water samples, performing aquifer pumping and slug tests, surveying, trouble shooting equipment maintenance, overseeing well installation, tank removal, soil excavation, as well as reporting to clients and regulatory agencies.

- Aquifer analysis and data collection using data logging, Aqtesolv, and BRR Slug.
- Field sample and data collection.
- Interpretation of field data and preparation of reports and proposals for client and regulatory agency use.
- Geology laboratory support services; including core sample analysis, well-logging, drill mud analysis, and total organic carbon testing.
- Asbestos inspection and abatement oversight
- Hazardous Waste Management
- Compliance audits for SPCC and SWPP

Ms. Drake has served as Field Geologist or Project Manager for more than 100 petroleum-impacted sites in Minnesota, Wisconsin, Iowa, North Dakota, and South Dakota.

#### **SELECTED PROJECTS**

##### **Soil Excavation for Asbestos Contaminated Soils, Minot, North Dakota,**

**Project Manager** This project involved the removal of 700 cubic yards of asbestos contaminated soils from railroad right-of-way in Minot, North Dakota. The United States Environmental Protection Agency (USEPA) conducted preliminary testing and delineation. Ms. Drake worked with the USEPA when planning and executing the project in order to comply with the processes and procedures set forth by the USEPA. EMR coordinated and oversaw the removal of the asbestos contaminated soils at the site. EMR conducted soil sampling and air monitoring associated with this project. Upon completion of the project, Ms. Drake prepared the final report for submittal to the USEPA on behalf of EMR's railroad client.

**Heavy Metal in Soils and Asbestos Inspection/Air Monitoring, Arden Hills, Minnesota.**

**Project Manager** This project involved field screening heavy metals analysis in soils at a former Army Ammunitions facility in Arden Hills, Minnesota. Ms. Drake has been responsible for project management activities including scheduling of personnel, establishing protocol and dealing with client concerns and issues. EMR has utilized multiple dual-source XRF units to provide real-time field screening results to the contractor for the past four seasons. EMR also provided asbestos inspection and asbestos air monitoring services associated with un-permitted landfills located on site during excavation activities. Ms. Drake has been involved with the project in most aspects including management and providing relief operations for project personnel.

**Asbestos and Petroleum Impacted Soil Excavation, St. Paul, Minnesota:**

**Program Manager** This project involved removal of 4,000 cubic yards of asbestos and petroleum impacted soil. Soil removal was required for a building project scheduled on site; the site is a railroad museum. EMR conducted soil screening for petroleum hydrocarbons and visual inspection for asbestos. The sources of the asbestos on site were buried insulated pipes. Ms. Drake provided program management and also served as primary field person on site providing air monitoring and inspection activities.

**Crosby Lake Business Park, St. Paul, Minnesota:**

**Staff Geologist, Field Geological Investigation Team** responsibilities include assisting the geological investigation in site characterization, regulatory interpretation, groundwater modeling, and remediation. The site historically operated as a bulk storage facility/tank farm for Texaco. The investigation determined the type, amount and extent of environmental hazards present at the site; the risk assessment established cleanup levels. Ms. Drake served as on site field supervisor for three seasons. Remedial activities included excavation of impacted overburden for thermal treatment, land farming, and landfilling. She also conducted groundwater sampling associated with petroleum hydrocarbon impacts to the sandstone bedrock aquifer. Upon completion of field activities, the site was redeveloped by the St. Paul Port Authority. Impacts at the site included petroleum hydrocarbons and lead. Ms. Drake was completing remediation on behalf of the client under Minnesota's Voluntary Investigation and Cleanup (VIC) Program for another consulting firm.

**Environmental Compliance Management, Upper Mid-West**

**Project Manager** These projects have involved efforts in most aspects of environmental compliance and waste management for multiple railroad clients. Topics of compliance covered under these program management responsibilities included; regulatory review, incident response, response planning, storm water management, waste management, training, asbestos management, tank management, wastewater treatment, air permitting, and noise related issues. Many other aspects of compliance and waste management are covered under these programs as well, including material management and recycling efforts.

**Coastal Mart, Inc.**

**Project Manager** for numerous LUST sites for Coastal Mart, Inc. sites located in Iowa, South Dakota, and Minnesota. Provided project oversight and field activities at approximately 80 sites in Iowa; completing Tiered RBCA Site Assessment Reports, periodic Site Cleanup Reports, Tank Closure Reports, Free Product Recovery Reports, and Site Closure Reports, as warranted, for all Iowa sites. Ms. Drake has been involved in the LUST site management program for Coastal beginning in 1995 as a Staff Geologist.

*Experience Profile*

**Robert G. Williams P.E., CIH, CSP**

Senior Engineer, Certified Industrial Hygienist/QA/QC/Health & Safety

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**EDUCATION**

B.A. Chemistry, University of Kansas, 1978

B.S. Chemical Engineering, University of Kansas, 1985

**PROFESSIONAL AFFILIATIONS**

Professional Engineer (Civil/Sanitary) in Kansas

Certified Industrial Hygienist

**CERTIFICATIONS**

Certified in the Comprehensive Practice of Industrial Hygiene by the American Board of Industrial Hygiene

Hazardous Waste Site Supervisor

ASHERA Asbestos Inspector/Management Planner

ASHERA Asbestos Project Designer

ASHERA Asbestos Contractor/Supervisor

Lead Abatement Contractor/Supervisor

**EXPERIENCE SUMMARY**

Mr. Williams has over 7 years of diverse experience as the President of a small engineering company specializing in HVAC design for light commercial and industrial applications. He has conducted Indoor Air Quality Surveys, Hazardous Waste disposal and managed all environmental aspects of construction projects for several U.S. Government facilities. His comprehensive Industrial Hygiene services include:

- Asbestos
- Lead
- Organic Vapors
- Heavy Metals
- QA/QC
- Project Health & Safety Officer

**Project Summary Description:**

**Burlington Northern Santa Fe Railroad**

Robert worked as a Certified Industrial Hygienist (CIH) in charge of QA/QC for EMR review of the Asbestos Program for Burlington Northern Santa Fe Railway. His duties included:

- Oversight on Asbestos Abatement Project Practices with respect to
  1. Regulatory Compliance
  2. Worker Safety
  3. Ventilation Design
  4. Respiratory Protection
  5. Determination of Clearance Criteria
- Consultation with clients - especially on project without a third party consultant
- Comprehensive Industrial Hygiene Consulting

**Altus Air Force Base, Altus, OK Corps of Engineers Tulsa District, Over-flight Demolition QA/QC Manager for asbestos, lead and air curtain destructor.**

Robert worked as a Certified Industrial Hygienist (CIH) in charge of QA/QC for EMR review of the project environmental activities for USACE Tulsa District. His duties included:

- Oversight on Asbestos Abatement Project Practices with respect to
  6. Regulatory Compliance
  7. Worker Safety
  8. Ventilation Design
  9. Respiratory Protection
  10. Determination of Clearance Criteria
- Consultation with clients - especially on project without a third party consultant
- Comprehensive Industrial Hygiene Consulting

**Lincoln, NE – Havelock Shops – Burlington Northern Santa Fe Railroad/EMR, Inc.,  
Topeka, KS – Maintenance Shops – Burlington Northern Santa Fe Railroad/EMR, Inc.,**  
Robert worked as a Certified Industrial Hygienist (CIH) in charge of on-site monitoring of employee exposures to welding fumes, other gaseous hazards, lead and other fugitive dusts within the car repair shops and other maintenance facilities. Bob provided the service under contract to Burlington Northern Santa Fe Railway Medical Department. His duties included:

- Employee Exposure Monitoring for hazardous contaminants in a large Railroad Repair Shop
- Oversight on Employee Exposures with respect to
  1. Regulatory Compliance
  2. Worker Safety
  3. Ventilation Design
  4. Respiratory Protection
  5. Determination of Clearance Criteria
- Final report preparation providing compliance standards and corrective actions.

#### **D&D Services, Inc., Lenexa, KS**

Robert worked as a Project Manager for D&D from October 1992 to August 1993. D&D is a consulting branch company for a large environmental contracting company (B & R Insulation, Inc). His responsibilities included:

- General Environmental Consulting
- Comprehensive Industrial Hygiene Consulting

#### **B & R Insulation, Inc., Lenexa, KS**

Project Manager for large asbestos abatement projects in the commercial, industrial and public sectors from September 1985 to December 1987. His duties included:

- Oversight on Asbestos Abatement Project with respect to
  1. Regulatory Compliance
  2. Worker Safety
  3. Ventilation Design
  4. Respiratory Protection
  5. Determination of Clearance Criteria
- Consultation with clients - especially on project without a third party consultant
- Review of MSDSs for new products

#### **Kansas Department of Health & Environment**

Robert worked as an Environmental Engineer II. His duties included:

- Prepare Kansas Asbestos Control Regulation K.A. R. 28-50-1 through 28-50-14
- Performing field evaluation of Certified Asbestos Contractors (over 200 completed)
- Participation in Regulatory Enforcement Actions resulting from Contractor violations
- Speaking at public Meetings regarding the impact of the Kansas Asbestos Regulation on various industries, businesses and public agencies

- Lecturing at various training seminars on the specific content of the Kansas Asbestos Regulations

**Kansas Department of Health & Environment**

Robert worked as a Breath Alcohol Chemist. His duties included:

- Training police officers on the theory and operation of breath alcohol instruments
- Testifying in court regarding the validity of breath alcohol results
- Conducting a state side quality control program for breath alcohol testing

**Kansas Department of Health & Environment**

Roberts worked as an Occupation Health Chemist. His duties included:

- Conducting analytical chemistry procedures for inorganic and organic contaminants in the workplace
- Analyzing asbestos bulk samples for the 1982 EPA Asbestos-in-Schools Program